

1904, p. 718) who says: "wintering in Florida and other Gulf States," these statements are misleading and inaccurate, for the Blue-gray Gnatcatcher winters regularly on the coast of South Carolina. I have long known this fact, for on December 15, 1885, I saw about a dozen birds near Charleston and shot four specimens; while in January, 1886, others were noted during the memorable blizzard, and which was the coldest weather up to February, 1899. I herewith mention a few dates on which others were taken: January 10, 1889, one; January 2, 1893, one; December 26, 1898, saw two and obtained one; February 4, 1903, one. All the specimens taken are apparently *immature* birds and the question is where do the adults winter? As they are presumably more hardy than the young the assumption would be that they, or at least some of them, winter at points along the coast to the northward of Charleston. This is, however, not the case as there are no records of the birds wintering in North Carolina. Why the *young* of this species should winter and not the *adult* is certainly very strange.

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### ON HYBRIDS BETWEEN THE MALLARD (*ANAS BOSCHAS*) AND CERTAIN OTHER DUCKS.

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THE collection of the Museum of Comparative Zoölogy at Harvard University contains four hybrid ducks which are well worthy of description. In all one parent is Mallard, the other being Black Duck, Pintail and Baldpate respectively. All of these crosses have been previously noted, the Black Duck cross repeatedly, but very few specimens have been described in detail; or with any special reference to the relations of colors to color patterns in parents and hybrid offspring. A complete summary of all descriptions of Hybrid birds published previous to 1906 will be found in Suchetet.<sup>1</sup>

1. MALLARD (*Anas boschas*) × BLACK DUCK (*Anas obscura*).

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<sup>1</sup> Des Hybrides à l'état sauvage... des Oiseaux, 1897.

Museum of Comparative Zoölogy, No. 42855, ♂, shot on Currituck Sound, N. C., Jan. 9, 1889, by Dr. John Bryant.

The head of this specimen presents a very interesting appearance. The crown, as far back as the occipital region, is dark chocolate brown, the feathers margined and tipped with pale fulvous as in the Black Duck. The sides of the head below the line of the eye are light yellowish brown, striped with dark fulvous and green; while the postocular region, comprising a band about .75 in. in breadth running around to the back of the neck, is bright 'Mallard green.' The throat, and lower side of the fore-neck are thickly spotted with fulvous and green, with a few pale spots: a condition seen, though to a lesser degree, in young male Mallards. At the junction of neck and breast the feathers are very pale: this being the only suggestion of the white collar of the Mallard.

The breast, for a band about 4 inches broad, is of the characteristic Mallard chestnut, each feather, however, marked with a semilunar patch of dark brown. Posteriorly the chestnut of the breast shades into a pale yellowish brown, considerably darker than the belly color of the Mallard. At the level of the legs the semilunar spots disappear. Although the general tint of the belly is very much darker than in the Mallard, yet near the sides the characteristic vermiculations of that species can faintly be traced, as they likewise can be on the flanks. The lower tail coverts show a very remarkable condition, the feathers being streaked with black, and with rufous of a tint not occurring on that region in either Mallard or Black Duck.

The middle line of the back is typical *obscura*, the rump, however, is almost black, with a greenish gloss. The scapulars are vermiculated, and the arrow-shaped tertials are of the rich grayish brown of the Mallard. With this parent also the rest of the wing agrees, the speculum having the white frame of that species. The two middle tail coverts are curly, but the general color of the tail closely resembles that of the *obscura* parent. The legs and feet, in the dried skin, are light yellow.

To sum up: undoubted Mallard characters are, (1) green on the head; (2) chestnut breast band; (3) white wing markings; (4) tertials; (5) curly tail coverts; (6) color of legs and feet. Black Duck characters are: (1) color of crown, cheeks and neck; (2)

dark belly; (3) color of median region of back and tail. One character, the reddish markings of the lower tail coverts, appears for the first time in the hybrid.

2. MALLARD (*Anas boschas*) × BLACK DUCK (*Anas obscura*).

Museum of Comparative Zoölogy, No. 35638. Greene-Smith coll., No. 631, ♂; Long Island, N. Y. This is a mounted specimen, and has no date.

Crown, from bill over top of the head, dark brown, the feathers edged with yellowish brown. Sides of head and foreneck brownish yellow, or buffy, with dusky spots, exactly as in *obscura*. A well marked postocular stripe on either side is 'Mallard green'; these stripes, however, do not meet at the back of the head; and are somewhat broken by brown feathers. There is a white collar, but it is interrupted both in front and behind. The general ground color of the breast, for a band about 3.6 in. broad, is chestnut, rather darker than in most Mallards. The belly is brownish yellow — considerably darker than in the Mallard parent.

On the breast, as in the foregoing specimen, the feathers are marked with dark brown semilunar patches. More posteriorly these markings become less numerous; and at the level of the legs they disappear. The under tail coverts are streaked with black and rufous exactly as in the specimen already described. Unlike the latter, however, the flanks in the present specimen show no trace of vermiculations. The middle region of the back is typical *obscura*; the rump, however, very dark with a greenish gloss. The wings in general, and particularly speculum, scapulars and tertials, show the characteristic Mallard coloration, while the tail is dusky, as in *obscura*. The three middle coverts are curly. Legs and feet are brownish yellow.

This specimen is strikingly similar to the one already described, showing nearly the same Mallard and Black Duck characters, as well as the same new "hybrid" character.

3. MALLARD (*Anas boschas*) × PINTAIL (*Dafila acuta*).

Museum of Comparative Zoölogy, No. 40026, ♂. Shot on Currituck Sound, N. C., Feb. 1904, by Dr. John Bryant.

The bill in this specimen is very interesting. In color it is dark plumbeous, the nail, a stripe along the top of the culmen, and a triangular patch on either side of the mouth being black. This

coloration agrees exactly with the Pintail, but in size the bill suggests the Mallard parent, its measurements (from the dried skin) being culmen, 2.2 in.; depth at base .9 in., breadth .8 in. In adult male Mallards the culmen is about 2.3, in Pintails about 1.8.

The color of the head is a very beautiful combination of that of the two parents. The forehead and crown are dark grayish brown with scattered green feathers. The rest of the head shows a gradation between the Mallard green, and the bronze of the male Pintail. The postocular region is pure green. But the throat, sides of the head and fore neck are emerald in certain lights, and bronze when viewed in others. There is, on each side, a small semilunar white patch below the eye. The white collar also shows an intermediate condition. In front it is about .75 in. broad; but on either side it becomes broader and extends forward along the side of the neck as a narrow V-shaped stripe, about 1.75 in length. It thus approximates the white neck stripes of the Pintail parent. Posteriorly the green of the occipital region gives way to black, which in turn shades into brownish gray on the hind neck and back.

The fore breast is of the characteristic Mallard chestnut, but perhaps rather paler; but this band is only 3.2 in. broad. Posteriorly it shades into a white band, some 3.5 in. broad, which in turn gives way, on the belly, to pale gray marked with fine zig-zag lines. The under tail coverts are velvety black, the feathers elongated and pointed as in the Pintail. The flanks are pale gray, with vermiculations, but posterior to the legs there is a white patch, as in the Pintail.

The back, from neck to rump, is gray, with dark vermiculations as in the Pintail; but most of the feathers are edged with brown, a character evidently derived from the Mallard parent. The rump is very dark, almost black, and the upper tail coverts are black, the feathers edged with pale gray and rufous. This reddish tint occurs in neither parent. The tail has a decided "pin" consisting of two feathers, but these feathers are the two middle coverts, not tail feathers as in the Pintail. These elongated coverts are strongly curved upward. There are, in addition, 16 tail feathers. The scapulars are brownish gray, intermediate in tint between Mallard and Pintail, with the black scapular patch of the Pintail, though this, in the hybrid, is rather smaller than in *D. acuta*.

The tertials are broad arrow-shaped, grayish brown becoming darker at the margin, as in the Mallard. The first two tertials in each wing have the outer half black, thus suggesting the black stripes on the tertials of the Pintail. The speculum is bright metallic green, of a tint quite unlike this region in either parent. Its anterior border is of two colors, the inner half black, as in the Mallard, the outer half chocolate as in the Pintail. The posterior border of the speculum is black; and there is a white frame as in the Mallard parent.

The feet and legs are flesh colored, and agree in size, as well as in color, with the Mallard.

Pure Mallard characters in this very interesting hybrid are: (1) green of the postocular region; (2) chestnut breast band; (3) dark rump; (4) white frame around the speculum; (5) curliness of upper tail coverts; (6) size and color of feet and legs. Pure Pintail characters are: (1) color of the bill; (2) bronze on the head; (3) white neck stripes; (4) white lower breast; (5) presence of a "pin" in the tail, although it is not homologous with pin of *D. acuta*; (6) black scapular patch; (7) number of tail feathers; (8) long neck; (9) chestnut portion of anterior border of scapulars.

Characters appearing in neither parent, but new in the hybrid are: (1) rufous markings of upper tail coverts; (2) green color of speculum.

4. MALLARD (*Anas boschas*) × BALDPATE (*Mareca americana*).

Museum of Comparative Zoölogy, No. 42856, ♂. Long Point, Ontario; Nov. 1898. Shot by Mr. Louis Cabot.

The bill is of a dark grayish blue, the nail black, as in the Baldpate. It also resembles this parent in dimensions, measuring along the culmen 1.8 in.; in depth at the base .75 in., and greatest width .72. This is nearly  $\frac{1}{3}$  less than in the case of the adult male Mallard. In outline, also, the bill resembles that of the Baldpate, for it has its greatest breadth about midway of its length. In the Mallard, on the other hand, the greatest breadth is at the base; the bill narrows in the middle, and broadens again somewhat near the tip. The number of strainers forms another Baldpate character, there being in the mandible of the hybrid 38 on a side, in Baldpates 36 to 38, and in Mallards 49 or 50.

The crown from the bill to the occipital region and as far down

on the sides as the eyes, is chocolate brown, the feathers having dark centers which gives a peculiar spotted appearance. This color is somewhat like the crowns of immature Mallard drakes, but does not occur in the Baldpate. The postocular regions on either side are Mallard green; and these stripes join at the back of the head, and extend down the sides of neck for about .5 inch. There is a stripe of Mallard green, mixed with brown and buffy feathers, about .3 in. broad running from the eye down to the throat. The sides of the head, posterior to this stripe and below the postocular patch, are cream-colored with a few black and green feathers, as in the adult male Baldpate. The remainder of the head, throat, and fore neck are pale yellowish brown or buffy, thickly spotted with green feathers. There is no white collar; but the breast is of the characteristic Mallard chestnut, a color totally distinct from the salmon tint of the corresponding region of the Baldpate.

The band is about 3 inches broad and passes posteriorly into white. The belly is white, washed with pale reddish, a character appearing at times in various of the river ducks, and probably due to external causes.

From the anus posteriorly, glossy black, as are the lower tail coverts. The sides are gray, washed with pale reddish, and with darker vermiculations. The flanks are white. Thus the color pattern of the sides and belly agrees with that of the Baldpate parent, while the color of the sides is intermediate between the two species.

The median region of the back is gray as in the Mallard. But the shoulders and scapulars are distinctly tinged with salmon color, a Baldpate character. The rump is very dark, with greenish gloss. The upper tail coverts are light gray, much lighter than in the Mallard, many of the feathers being edged with dirty white. Unfortunately this region is so badly shot that it is impossible to tell whether any of the coverts were curly. The two middle tail feathers are pointed, and longer than the others, as in the Baldpate.

The scapulars are strongly vermiculated; the inner tertials are plain, as in the Mallard, but the outer ones have the outer half black, with a narrow white margin, as in the Baldpate. The speculum is of the purple tint characteristic of the Mallard; with

black frame and white bars as in that species. This pattern is very different from the Baldpate speculum. Immediately anterior to the speculum is a large light gray patch, apparently the remnant of the white patch on the wing of the Baldpate. The legs and feet are yellowish.

To summarize: Pure Mallard characters of this specimen are: (1) green color of the postocular region, the emerald tint being very different from the lighter green on the head of the male Baldpate; (2) chestnut breast; (3) dark rump; (4) speculum and white frame; (5) color of legs and feet. Baldpate characters are: (1) color, size and shape of bill; (2) cream-colored cheeks; (3) white belly; (4) salmon tint on shoulders; (5) black markings on tertials; (6) light patch on the wing. There are no new characters appearing in this hybrid.

Without endeavoring to draw any conclusions from the inheritance of the parental characters — indeed the material is far too scanty — I may call attention to one or two striking results. There are four Mallard characters appearing in all of the hybrids. These are the chestnut breast band, the white frame about the speculum, the dark rump, and the presence of 'Mallard green' somewhere on the head. Likewise the color and size of legs and feet agree with the Mallard in both the cases in which the two parents differ in this respect. The curly tail coverts, likewise, appear in three out of the four cases, and may very probably have been present in the fourth. On the other hand, size, shape and color of bill agree with the other parent, in both cases where the two differ in this character. Finally, the new characters appearing in the hybrids are worthy of special attention. These are two, the green speculum in the Pintail hybrid, and the rufous markings on the lower tail coverts in both Black Duck hybrids. The first of these, being an iridescent color, may perhaps be really the manifestation of intermediate structure. The second is not easy to explain.